

## SECTION IV

## BODY GROUP

## 4-1. GENERAL.

4-2. DESCRIPTION. (See Figure 4-1.) The forward portion of the fuselage, between stations 54 and 179.75 is a semimonocoque metal structure, enclosing the cockpit. It consists of four longerons, firewall and formers covered by 24ST alclad sheet. Spanning the cockpit and just aft of the rear seat at station 147.125 is a tubular tie rod which is riveted to the upper longerons. Two longitudinal beams supported at the firewall and at the wing forward attachment bulkhead accommodate the nose gear. The pilot's floor covers these two beams, and extends from the firewall to the wing forward attachment bulkhead. The baggage compartment floor is supported fore and aft by fuselage frames at station 142.57 and station 179.75 and on the sides by the lower longerons. The aft part of the fuselage, between stations 179.75 and 313.25, is of monocoque construction, reinforced by frames. The empennage attaches to the fuselage bulkheads at stations 273.118, 294.1 and 311.07.

4-3. ALIGNMENT. In the event of extensive damage to the fuselage the basic alignment dimensions shown in Figures 1-2 may be used.

4-4. ACCESS FOR REPAIR. Access to the fuselage interior may be gained through the cockpit, baggage compartment, access doors near the tail, nose wheel well, and removable fairing aft of the wing.

## 4-5. SKIN.

4-6. DESCRIPTION. The arrangement, material, and gage of the fuselage skin panels are shown in Figure 4-2.

4-7. NEGLIGIBLE DAMAGE. Smooth dents free of cracks or abrasions located anywhere on the fuselage skin may be disregarded, provided they do not exceed a depth of 1/8 inch and 1-1/2 inches in diameter and adjacent dents are at least 15 inches apart. Dents exceeding the above limits, and subsequently bumped back to contour without cracking or creasing the skin may be considered negligible damage. Scratches which do not penetrate beyond the alclad coating may be considered negligible damage.

## 4-8. DAMAGE REPAIRABLE BY PATCHING.

4-9. GENERAL. Any damage that exceeds the specified limits of negligible damage must be repaired to regain the structural strength of the skin. Skin patches may be either the flush type shown in Figure B-1 or the external type shown in Figure B-3. The edges of the patch must be chamfered. Paint all repair materials with at least one coat of zinc chromate primer. The type of skin patch that can be used will be dependent upon time, materials and equipment available and appearance desired. Clean up damaged area with a circular hole or rectangular cutout, with 1/2 inch minimum corner radii for rectangular cutouts. Smooth all edges to remove burrs.

4-10. FLUSH SKIN PATCH CLEAR OF INTERNAL STRUCTURE. (See Figure B-1.) Damage to the skin clear of internal structure may be repaired by a riveted flush skin patch. To install the patch, trim the skin beyond the damaged area, leaving sufficient skin to allow

for the installation of the doubler. Rivet the doubler to the existing skin and then rivet the patch to the doubler. Skin patch repair information may be obtained from the Figure. The typical dimensions shown on the Figure are applicable for the repair of all skin panels.

4-11. FLUSH SKIN PATCH OVER INTERNAL STRUCTURE. (See Figure B-1.) Damage to the skin and internal structure may be repaired by repairing the internal structure and then installing the skin patch. Before attempting the repair, trim the skin beyond the damaged area, leaving sufficient existing skin to allow for the installation of the doubler. Repair the internal structure and install the doubler as shown in the Figure. The necessary repair information may be obtained from the Figure. The rivets tying the skin patch to the repaired internal structure should be the same as the existing rivets or one diameter larger, and should have the same spacing as the rivets in the original structure.

4-12. EXTERNAL SKIN PATCHES. (See Figure B-3.) The damaged area must be trimmed before applying the outside skin patch. If the patch is applied over internal structures, a filler the same gage as the existing skin must be placed between the patch and the existing structure. The rivet pattern thru the internal structure must be duplicated.

## 4-13. BULKHEADS AND FRAMES.

## 4-14. GENERAL.

4-15. DESCRIPTION. (See Figure 4-1.) The general arrangements and location of the bulkheads and fuselage frames are shown in the figure. All are made of 24ST clad except the firewall which is .019 steel.

## 4-16. FIREWALL, STATION 54.

4-17. DESCRIPTION. The bulkhead web is .019 SAE 1020 steel; it is divided into an upper and lower section. They are each approximately semicircular in shape. The upper is riveted to a 24ST alclad angle, the lower has an integral flange turned forward. There are cutouts for the nose gear housing and for the engine cooling air. The flat part of both upper and lower sections of the web are stiffened with vertical beads. There are also vertical and horizontal 24ST alclad angles which serve as stiffeners and supports for equipment.

4-18. NEGLIGIBLE DAMAGE. Smooth dents free of cracks or abrasions located anywhere on the firewall may be disregarded, provided they do not exceed a depth of 1/8 inch and 1-1/2 inches in diameter, and adjacent dents are at least 15 inches apart. Dents exceeding the above limits and subsequently bumped back to contour without cracking or creasing the web may be considered negligible damage. Dented or bent flanges and angles bumped back to contour without cracking, creasing or waviness may be classified negligible damage.

4-19. WEB DAMAGE REPAIRABLE BY PATCHING. Damage to the web which exceeds the limits of negligible damage must be repaired by a SAE 1020 steel patch of the same or next heavier gage. The patch must be riveted to the existing web by AN470AD4 rivets spaced 3/4